



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/564,066	01/10/2006	Jakob Blattner	72099	3956
23872	7590	12/13/2007		
MCGLEW & TUTTLE, PC P.O. BOX 9227 SCARBOROUGH STATION SCARBOROUGH, NY 10510-9227			EXAMINER DHINGRA, RAKESH KUMAR	
			ART UNIT 1792	PAPER NUMBER
			MAIL DATE 12/13/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/564,066	Applicant(s) BLATTNER ET AL.	
	Examiner Rakesh K. Dhingra	Art Unit 1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10/25/07.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13 and 15-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-13 and 15-26 is/are rejected.
- 7) ☒ Claim(s) 18 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 January 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description:

Some examples of such missing reference numbers are given hereunder.

Figure 1: a) Reference number 100 (device) is not shown in the drawing (per specification – para. –0060);

b) Reference number 20 (clean air unit) is not shown in the drawing (per specification – para. 0060);

c) Reference number 32 (handling device) is not shown in the drawing (per specification – para. 0061);

Figure 5a -5d: Reference number 60 (gripper) is not shown in the drawing (per specification – para. 0064).

Applicant may check all the drawings for any such errors and correct the same.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either “Replacement Sheet” or “New Sheet” pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

Claim 18 is objected to because of the following informalities:

Line 4 of the claim recites in part “each storage element receiving a via a substrate depositing means”, which appears to be missing the word “substrate” between “a’ and “via”.

Applicant may verify and appropriately correct the claim.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention as explained hereunder.

Claim 1 recites in part “a moving means for moving said tool relative to said stacked storage elements, said moving means moving said tool with said first storage element contact surface engaged with said first storage element such that said second storage element contact surface engages a second storage element adjacent said first storage element, whereby said tool divides said plurality of stacked storage elements into an upper stack of storage elements and a lower stack of storage elements, said first storage element being located at a spaced location from said second storage element when said second storage element contact surface contacts said second storage element, said moving means moving said tool with said first storage element contact surface engaged with said first storage element and with said second storage element contact

surface engaged with said second storage element such that said second storage element is located at a spaced location from said upper stack of storage elements and said lower stack of said storage elements”, which is indefinite since the specification does not adequately disclose the corresponding structure of the means for achieving the claimed structure. While paragraph 0061 of the specification describe about a control panel 30 and a tool 50 coordinated with the device, and paragraph 0065 describes rotation of tool 50, the disclosure does not adequately describe the structure for achieving the claimed limitation.

Applicant is invited to provide clarification in this regard.

Claims 2-14, 15-17, 20-23 are also rejected being dependent claims.

Response to Arguments

Applicant's arguments with respect to claims 1-19 have been considered but are moot in view of the new ground(s) of rejection as explained hereunder.

Applicant has amended claims 1-5, 9-11, and 15-19 by adding new limitations. Further, applicant has cancelled claim 14 and added new claims 20-26.

Accordingly, claims 1-13 and 15-26 are now pending and active.

New references by Schneider (US Patent No. 4,055,258) and Cerf (US Patent No. 4,909,412), when combined with Abe et al and Kato et al read on amended claim 1 limitations. Accordingly claim 1 and claims 2-8, 12, 13, 15-17, 19, 20 and 26 have been rejected under 35 USC 103 (a) as explained below. Balance claims 9-11, 18, 21-25 have also been rejected under 35 USC 103 (a) as explained below.

Further, claims 1-8, 19 have also been rejected under 35 USC 103 (a) over Abe et al in view of Kato et al as explained below. Balance claims 9-13, 15-17, 20-23 and 26 have also been rejected under 35 USC 103 (a) as explained below.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-8, 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abe et al (JP 2001-291759) in view of Kato et al (US Patent No. 5,752,609).

Regarding Claims 1, 2: Abe et al teach a device for storing plate-shaped substrates and comprising:

a plurality of consecutive storage elements 1 (with nail plate 2a) stacked in a stacked direction, each storage element accommodating at least one substrate 21;

a tool 6 having a first storage element contact surface and a second storage element contact surface, said first storage element contact surface engaging a first storage element;

a stacking area associated with each of the storage elements.

Abe et al also teaches moving means 5 (with a control system) for moving said tool 6 relative to said stacked storage elements, said moving means moving said tool 6 with said first storage element contact surface engaged with said first storage element such that said second storage element contact surface engages a second storage element adjacent said first storage element. (for example, Fig. 1, 9 and para. 0027, 0028, 0055-0058). Balance limitations "whereby said tool divides said plurality of stacked ----- and said lower stack of said storage element", are functional limitations and since the apparatus of prior art meets the structural limitations of the claim, the same is considered capable of meeting the functional limitation.

In this connection courts have ruled:

Claims directed to apparatus must be distinguished from the prior art in terms of structure rather than function. *In re Danly*, 263 F.2d 844, 847, 120 USPQ 528, 531 (CCPA 1959). Apparatus claims cover what a device is, not what a device does *Hewlett-Packard Co. V. Bausch & Lomb Inc.*, 15USPQ2d 1525, 1528 (Fed. Cir. 1990).

{Claim limitation "a moving means for moving said tool-----lower stack of said storage elements" is not interpreted as "means plus function" limitation under 35 USC 112, 6th paragraph since it does not satisfy the third prong of the 3-prong analysis, which states "the phrase "means for" or "step for"

must not be modified by sufficient structure, material, or acts for achieving the specified function" and further "112, 6th paragraph does not apply when the claim limitation itself recites sufficient acts for performing the specified function"} [MPEP 2181].

Further, Abe et al do not explicitly teach a means for depositing a substrate in each of the storage elements.

Kato et al teach a substrate holder assembly comprising storage elements 63 and having projections 52a, 52c (means for depositing) for supporting a substrate W on each storage element (for example, Fig. 5 and col. 4, line 64 to col. 5, line 33).

It would have been obvious to one of ordinary skills in the art at the time of the invention to provide a means for depositing on each storage element as taught by Kato et al in the apparatus of Abe et al to provide support to the substrates with minimal contact area and thus avoid any damage to the substrates.

Regarding Claim 3: Abe et al teach the storage elements can be handled at their stacking area for controlling the distance between two consecutive storage elements (para. 0036).

Regarding Claim 4: Abe discloses that moving means 5 enables relative motion between the two storage elements for producing an increased distance (para. 0036).

Regarding Claim 5: Abe et al teach storage trays 1 for use with flat-panel displays and wafers (para. 0012, 0013), but do not teach the storage elements are self-contained storage rings (claim limitation "self-contained storage element" is interpreted as "storage ring" absent any special meaning disclosed by the applicant for the term "self-contained"). However shape is a matter of choice and it would be obvious to match the shape of the storage member to the shape of the corresponding substrate, absent persuasive evidence that the particular configuration was significant.

In this connection courts have ruled:

It was held in *re Dailey*, 357 F.2d 669, 149 USPQ 47 (CCPA 1966) that the shape was a matter of choice which a person of ordinary skill in the art would have found obvious absent persuasive evidence that the particular shape was significant. (Also see MPEP 2144.04(d)).

Regarding Claims 6,7: Kato et al teach the storage elements 63 having means for depositing 52a, 52c that comprise inwardly and upwardly directed projections and a horizontally directed contact surface for engaging and contacting the substrates (Fig. 5).

Regarding Claim 8: Abe teaches the storage elements 1 arranged on top of one another and form an at least laterally enclosed space (Fig. 1).

Regarding Claims 12 and 13: Applicant has invoked 35 USC 112, 6th paragraph for the claim limitation “means for increasing stability and /or positioning accuracy of superimposed storage elements” for which the structure disclosed by the applicant comprises centering elements, which are attached at the storage elements and accurately align the storage elements in relation to one another (paragraph 0018).

Abe teaches projections 1a and slots 1b (means for increasing stability and/or positioning accuracy, and centering means) of superimposed storage elements 1, which cooperate to accurately align and stabilize the storage elements 1 (Fig. 2 and para. 0027).

Regarding Claim 19: Regarding Claim 19: Abe et al in view of Kato et al teach a method for handling disc shaped substrates all limitations of the claim (as already explained above under claim 1) including selecting one of said storage elements 2b for removal from said stack of separatable storage elements to define a selected storage element; moving said stack of separatable storage element such that said tool 6 is positioned in an area adjacent said selected storage element 2b, said tool engaging one of said storage elements 2a located adjacent said selected storage element such that said first contact surface is in contact

with said adjacent storage element 2a;
moving said tool 6 with said first contact surface in contact with said adjacent storage element 2a such that said second contact surface engages said selected storage element 2b, said adjacent storage element 2a being located at a spaced location from said selected storage element 2b when said second contact surface engages said selected storage element 2b;
moving said tool 6 with said first contact surface in contact with said adjacent storage element 2a and with said second contact surface in contact with said selected storage element 2b such that said selected storage element 2b is located at a spaced location from another adjacent storage element 2c, whereby said selected storage element 2b is separated from said stack of separatable storage elements.

Claims 9-11, 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abe et al (JP 2001-291759) in view of Kato et al (US Patent No. 5,752,609) as applied to claims 1-8, 19 and further in view of Tanaka et al (US PG PUB No. 2002/0002946).

Regarding Claim 9: Abe et al in view of Kato et al teach all limitations of the claim except a means for producing clean air such that a clean room atmosphere is produced in the enclosed space.

Applicant has invoked 35 USC 112, 6th paragraph for claim limitation “means for producing clean air -----in the entire enclosed space”, for which the disclosed structure is reference number 20 clean air unit (Figure 1 and para. 0060).

Tanaka teaches an apparatus comprising a stack of substrates 31 contained in a transfer container 30 filled with clean air (means for producing clean air) so as to produce a clean room atmosphere (for example, Fig. 3 and para. 0061).

Therefore it would have been obvious to one of ordinary skills in the art at the time of the invention to provide a means for producing clean air as taught by Tanaka et al in the apparatus of Abe et al in view of Kato et al to obtain a clean environment in the device thus minimizing the contamination of substrates.

Regarding claim 10: Tanaka et al teaches that an overpressure can be produced in the interior of the transfer device 30 (para. 0061).

Regarding Claim 11: Tanaka et al teach clean gas flows into and out of the transfer container 30 (means for producing clean air). It would be obvious to control the in- flow and discharge of this clean gas to maintain laminar flows adjacent the substrates [para. 0061].

Regarding Claim 22: Tanaka et al teach that clean air is circulated at higher pressure in the transfer device 30. Further, claim limitation pertaining to use of nitrogen as a circulating gas instead of clean air pertains to contents of apparatus during an intended use and is not considered significant for determining patentability.

In this connection courts have ruled:

Expressions relating the apparatus to contents thereof during an intended operation are of no significance in determining patentability of the apparatus claim. Ex parte Thibault, 164 USPQ 666, 667 (Bd. App. 1969).

Claims 15-17, 20, 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abe et al (JP 2001-291759) in view of Kato et al (US Patent No. 5,752,609) as applied to claims 1-8, 19 and further in view of Cerf (US Patent No. 4,909,412).

Regarding Claim 15: Abe et al in view of Kato et al teach all limitations of the claim except that the two contact surfaces of the tool are offset against one another in the stacked direction of the storage elements.

Cerf teaches an apparatus comprising a stack of storage elements 14 and a tool having a first storage element contact surface 36A and a second storage element contact surface 36B. Cerf further teaches that vertical and horizontal motions of first and second storage element contact surfaces 36A, 36B relative to storage elements 14 are controlled by moving means 1-4 so that the said first storage element contact surface 36A is engaged with said first storage element such that the said second storage element contact surface 36B engages a second storage element adjacent said first storage element. Cerf additionally teach that plate shaped storage elements can also be used in his apparatus. Cerf also teaches that the two contact surfaces 36A, 36B are offset against one another in the stacked direction of the stack 14 (for example, Fig. 9 and col. 8, lines 5-10).

Therefore it would have been obvious to one of ordinary skills in the art at the time of the invention to provide the tool that can have the two contact surfaces with an offset as taught by Cerf in the apparatus of Abe et al in view of Kato et al to enable correct for any inclination between consecutive storage elements.

Regarding Claim 16: Abe et al teach relative mobility of the two contact surfaces of the tool 6 with respect to storage elements. Further, Cert also teach relative mobility of the two contact surfaces 36A, 36B in vertical and horizontal directions (for example, Fig. 4-13 and col. 4, line 63 to col. 6, line 65).

Regarding Claim 17: Abe et al in view of Kato et al and Cerf teach that tool (36A, 36B) is movable in a plane parallel to the surface of the substrates 21 (Fig. 4, 5 – Cerf).

Regarding Claims 20, 26: Cerf teaches that the pitch of lower stack and upper stack is not changed when the tool releases a selected partial stack of the storage elements in stack 14.

Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Abe et al (JP 2001-291759) in view of Kato et al (US Patent No. 5,752,609 as applied to claims 1-8, 12-17, 19, 20 and 26 and further in view of Matsuyama et al (US PGPUB No. 2002/0125170).

Regarding Claim 21: Abe et al in view of Kato et al teach all limitations of the claim except sealing means for sealing storage elements.

Applicant has invoked 35 USC 112, 6th paragraph for the claim limitation “sealing means for pressing one storage element against another storage element such that said storage elements are sealed” and for which the disclosed structure includes storage rings having sealing elements and together with the cover plate and the bottom plate, they form a sealed transport container 200 for substrates, or alternately the transport container 200 can be inserted into an external sealable transport box.

Matsuyama et al teach a transport container 54 that is inserted into an external sealable transport container 12 having a hermetically sealed space 16 (for example, Fig. 1-4 and col. 7, lines 9-40).

Therefore it would have been obvious to one of ordinary skills in the art at the time of the invention to provide an external sealable container (as sealing means) for housing the transport container as taught by Matsuyama et al in the apparatus of Abe et al in view of Kato et al to enable transfer the substrates while enclosed in a clean environment.

Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Abe et al (JP 2001-291759) in view of Kato et al (US Patent No. 5,752,609) and Tanaka et al (US PGPUB No. 2002/0002946) as applied to claim 22 and further in view of Matsuyama et al (US Patent No. 6,238,283).

Regarding claim 23: Abe et al in view of Kato et al and Tanaka et al teach all limitations of the claim except further comprising a cover plate and a lower bottom plate, a space in which said plurality of storage elements is located, said sealing means, said cover plate, said lower bottom plate and said nitrogen providing clean room conditions within said space.

Matsuyama et al a substrate container comprising a cover 54b, a lower bottom plate 54a and locking means 28 (sealing means) and a hermetically sealed space with plurality of storage elements. Matsuyama et al further teach a gas introduction pipe 84 and a gas release pipe 86 connected to the lower bottom plate 54a of the container 54 and a pressurized gas such as nitrogen can be introduced into the container 54 through the gas introduction pipe 84, thus providing a clean room condition in the space (Fig. 18 and col. 13, lines 28-40).

Therefore it would have been obvious to one of ordinary skills in the art at the time of the invention to provide cover plate, lower bottom plate, sealing means and nitrogen supplied to the space containing storage elements as taught by Matsuyama et al in the apparatus of Abe et al in view of Kato et al and Tanaka et al to provide a clean environment thus reducing particle contamination of the substrates.

Claims 1-8, 12, 13, 15-17, 19, 20 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abe et al (JP 2001-291759) in view of Kato et al (US Patent No. 5,752,609), Schneider (US Patent No. 4,055,258) and Cerf (US Patent No. 4,909,412).

[This parallel rejection is written considering that applicant has invoked 112, 6th paragraph for claim limitation "a moving means -----of said storage elements"].

Regarding Claims 1, 2: Abe et al teach a device for storing plate-shaped substrates and comprising:

a plurality of consecutive storage elements 1 (with nail plate 2) stacked in a stacked direction, each storage element accommodating at least one substrate 21;

a stacking area associated with each of the storage elements (Fig. 1, 2 and para. 0027, 0028);

Abe et al do not explicitly teach a means for depositing a substrate in each of the storage elements; a tool having a first storage element contact surface and a second storage element contact surface, said first storage element contact surface engaging a first storage element; a moving means for moving said tool relative to said stacked storage elements, said moving means moving said tool with said first storage element contact surface engaged with said first storage element such that said second storage element contact surface engages a second storage element adjacent said first storage element, whereby said tool divides said plurality of stacked storage elements into an upper stack of storage elements and a lower stack of storage elements, said first storage element being located at a spaced location from said second storage element when said second storage element contact surface contacts said second storage element, said moving means moving said tool with said first storage element contact surface engaged with said first storage element and with said second storage element contact surface engaged with said second storage element such that said second storage element is located at a spaced location from said upper stack of storage elements and said lower stack of said storage elements.

Applicant has invoked 35 USC 112, 6th paragraph for claim limitation “means for depositing a substrate in each of the storage elements”, for which the disclosed structure is reference number 16 (Figure 2 and abstract).

Kato et al teach a substrate holder assembly comprising storage elements 63 and having projections 52a, 52c (means for depositing) for supporting a substrate W on each storage element (for example, Fig. 5 and col. 4, line 64 to col. 5, line 33).

It would have been obvious to one of ordinary skills in the art at the time of the invention to provide a means for depositing on each storage element as taught by Kato et al in the apparatus of Abe et al to provide support to the substrates with minimal contact area and thus avoid any damage to the substrates.

Abe et al in view of Kato et al do not teach a tool having a first storage element contact surface and a second storage element contact surface, said first storage element contact surface engaging a first storage element; a moving means for moving said tool relative to said stacked storage elements, said moving means moving said tool with said first storage element contact surface engaged with said first storage element such that said second storage element contact surface engages a second storage element adjacent said first storage element, whereby said tool divides said plurality of stacked storage elements into an upper stack of storage elements and a lower stack of storage elements, said first storage element being located at a spaced location from said second storage element when said second storage element contact surface contacts said second storage element, said moving means moving said tool with said first storage element contact surface engaged with said first storage element and with said second storage element contact surface engaged with said second storage element such that said second storage element is located at a spaced location from said upper stack of storage elements and said lower stack of said storage elements.

Schneider teaches an apparatus comprising a tool for extracting substrates from a stack 4 having a first storage element contact surface 21 and a second storage element contact surface 22, said first storage element contact surface engaging a top element of the stack (first storage element).

Further, applicant has invoked 35 USC 112, 6th paragraph regarding claim limitation “ a moving means -----of said storage elements” for which the structure disclosed comprises rotation of tool 50 around stack 12 of storage elements, and also the storage rings can be moved upwards by a certain path (Figures 5a – 5d and paragraphs 0064, 0065).

Schneider further teaches moving means 1a, 2 (controlled by an automatic control device that operates various drives for controlling the operation of the apparatus) for moving the tool relative to the stacked storage elements. Schneider also teaches that spacing between upper and lower jaws 21 and 22 can be adjusted depending upon length of stack to be gripped, that is, the first storage element contact surface engages with said first storage element and the second storage element contact surface engages a second storage element adjacent said first storage element (additional means 28 can be used for gripping very thin stack of substrates). Schneider additionally teaches that a separation is created between the lifted partial stack and the remainder of the stack, that is the tool divides the stack into two parts with space between them {for example, Fig. 1, 2 and col. 3, line 17 to col. 4, line 55}.

Therefore it would have been obvious to one of ordinary skills in the art at the time of the invention to provide a tool with first and second storage elements contact surfaces and moving means as taught by Schneider in the apparatus of Abe et al in view of Kato et al to enable the tool pick up a partial stack of storage elements from the stack.

Abe et al in view of Kato et al and Schneider teach that the apparatus enables taking out a partial stack from the stack of stored elements with space between the two stack portions, but do not explicitly teach that the tool divides the said plurality of stacked storage elements into an upper stack of storage elements and a lower stack of storage elements, said first storage element being located at a spaced location from said second storage element when said second storage element contact surface contacts said second storage element, said moving means moving said tool with said first storage element contact surface engaged with said first storage element and with said second storage element contact surface engaged with said second storage element such that said second storage element is located at a spaced location from said upper stack of storage elements and said lower stack of said storage elements.

Cerf teaches an apparatus comprising a stack of storage elements 14 and a tool having a first storage element contact surface 36A and a second storage element contact surface 36B. Cerf further

teaches that vertical and horizontal motions of first and second storage element contact surfaces 36A, 36B relative to storage elements 14 are controlled by moving means 1-4 so that the said first storage element contact surface 36A is engaged with said first storage element such that the said second storage element contact surface 36B engages a second storage element adjacent said first storage element, whereby the tool divides said plurality of stacked storage elements 14 into an upper stack of storage elements and a lower stack of storage elements, said first storage element being located at a spaced location from said second storage element when said second storage element contact surface 36B contacts said second storage element. Cerf also teaches that, said moving means moves said tool with said first storage element contact surface 36A engaged with said first storage element 14 and with said second storage element contact surface 36B engaged with said second storage element such that said second storage element is located at a spaced location from said upper stack of storage elements and said lower stack of said storage elements. Cerf also teaches that plate shaped storage elements can also be used in this apparatus. Further, it would be obvious to have more than one storage element in the lower stack, and select and move an intermediate storage element instead of the lower most storage element, depending upon the shape of the storage element and the arrangement for disposing the selected storage element {for example, Fig. 4-7-13 and col. 5, line 63 to col. 7, line 10 and col. 8, lines 1-10).

Therefore it would have been obvious to one of ordinary skills in the art at the time of the invention to provide moving means that enable relative movement between the tool and the stacked storage elements as taught by Cerf in the apparatus of Abe et al in view of Kato et al and Schneider to enable extract a selected storage element from the stack.

Regarding Claim 3: Abe et al teach the storage elements can be handled at their stacking area for controlling the distance between two consecutive storage elements (para. 0036).

Regarding Claim 4: Abe discloses a relative motion can be carried out between the two storage elements for producing an increased distance. (para. 0036). Further, Cerf also teaches an apparatus

comprising a stack 14 , a tool comprising jaws 36A, 36B and a moving means (air cylinders 1-4) that enable to move the tool such that distance between consecutive storage elements 14 is increased (for example, Figs. 6-13 and col. 5, line 3 to col. 6, line 38).

Regarding Claim 5: Abe et al teach storage trays 1 for use with flat-panel displays and wafers (para. 0012, 0013), but do not teach the storage elements are self-contained storage rings (claim limitation “self-contained storage element” is interpreted as “storage ring” absent any special meaning disclosed by the applicant for the term “self-contained”) . However shape is a matter of choice and it would be obvious to match the shape of the storage member to the shape of the corresponding substrate, absent persuasive evidence that the particular configuration was significant.

In this connection courts have ruled:

It was held in *re Dailey*, 357 F.2d 669, 149 USPQ 47 (CCPA 1966) that the shape was a matter of choice which a person of ordinary skill in the art would have found obvious absent persuasive evidence that the particular shape was significant. (Also see MPEP 2144.04(d)).

Regarding Claims 6,7: Kato et al teach the storage elements 63 having means for depositing 52a, 52c that comprise inwardly and upwardly directed projections and a horizontally directed contact surface for engaging and contacting the substrates (Fig. 5).

Regarding Claim 8: Abe et al teach the storage elements 1 arranged on top of one another and form an at least laterally enclosed space (Fig. 1).

Regarding Claims 12 and 13: Applicant has invoked 35 USC 112 6th paragraph for the claim limitation “means for increasing stability and /or positioning accuracy of superimposed storage elements” for which the structure disclosed by the applicant comprises centering elements, which are attached at the storage elements and accurately align the storage elements in relation to one another (paragraph 0018).

Abe teaches projections 1a and slots 1b (means for increasing stability and/or positioning accuracy, and centering means) of superimposed storage elements 1, which cooperate to accurately align the storage elements 1 (Fig. 2 and para. 0027).

Regarding Claim 15: Schneider teaches that two contact surfaces 21, 22 of the tool are offset against one another in the stacked direction of stacked elements 4 (Figure 2).

Regarding Claim 16: Schneider teaches relative mobility of the two contact surfaces 21, 22 (col. 3, lines 22-40).

Regarding Claim 17: Schneider also teaches that tool (21, 22) is movable in the direction of the stack by the automatic control device (col. 3, lines 35-41). Further, Cerf also teaches that tool (36A, 36B) is movable in the direction of the stack 14.

Regarding Claim 19: Abe et al in view of Kato et al, Schneider and Cerf teach all limitations of the claim (as explained above under claim 1) including method for providing tool having first and second contact surfaces 36A and 36B, a stack of separatable storage elements 14, selecting one of said storage elements 14 for removal from said stack of separatable storage elements to define a selected storage element;

moving said stack of separatable storage element 14 such that said tool is positioned in an area adjacent said selected storage element, said tool engaging one of said storage elements located adjacent said selected storage element such that said first contact surface 36A is in contact with said adjacent storage element;

moving said tool with said first contact surface 36A in contact with said adjacent storage element such that said second contact surface 36B engages said selected storage element, said adjacent storage element being located at a spaced location from said selected storage element when said second contact surface engages said selected storage element;

moving said tool with said first contact surface 36A in contact with said adjacent storage element and with said second contact surface 36B in contact with said selected storage element such that said selected storage element is located at a spaced location from another adjacent storage element, whereby said selected storage element is separated from said stack of separatable storage elements (for example, Fig. 4-13 and col. 4, line 63 to col. 7, line 10).

Regarding Claims 20, 26: Schneider teaches the spacing between the upper and lower jaws 21, 22 of the tool is adjustable, and the same is controlled by the automatic control device (implying that the pitch of lower stack and upper stack is not changed when the tool releases a selected partial stack of the storage elements in stack 4).

Claims 9-11, 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Abe et al (JP 2001-291759) in view of Kato et al (US Patent No. 5,752,609), Schneider (US Patent No. 4,055,258) and Cerf (US Patent No. 4,909,412) as applied to claims 1-8, 12-17, 19, 20 and 26 and further in view of Tanaka et al (US PGPUB No. 2002/0002946).

Regarding Claim 9: Abe et al in view of Kato et al and Schneider and Cerf teach all limitations of the claim except a means for producing clean air such that a clean room atmosphere is produced in the enclosed space.

Applicant has invoked 35 USC 112, 6th paragraph for claim limitation “means for producing clean air -----in the entire enclosed space”, for which the disclosed structure is reference number 20 clean air unit (Figure 1 and para. 0060).

Tanaka teaches an apparatus comprising a stack of substrates 31 contained in a transfer container 30 filled with clean air (means for producing clean air) so as to produce a clean room atmosphere (for example, Fig. 3 and para. 0061).

Therefore it would have been obvious to one of ordinary skills in the art at the time of the invention to provide a means for producing clean air as taught by Tanaka et al in the apparatus of Abe et al in view of Kato et al, Schneider and Cerf to obtain a clean environment in the device thus minimizing the contamination of substrates.

Regarding claim 10: Tanaka et al teaches that an overpressure can be produced in the interior of the transfer device 30 (para. 0061).

Regarding Claim 11: Tanaka et al teach clean gas flows into and out of the transfer container 30 (means for producing clean air). It would be obvious to control the in- flow and discharge of this clean gas to maintain laminar flows adjacent the substrates [para. 0061].

Regarding Claim 22: Tanaka et al teach that clean air is circulated at higher pressure in the transfer device 30. Further, claim limitation pertaining to use of nitrogen as a circulating gas instead of clean air pertains to contents of apparatus during an intended use and is not considered significant for determining patentability.

In this connection courts have ruled:

Expressions relating the apparatus to contents thereof during an intended operation are of no significance in determining patentability of the apparatus claim. Ex parte Thibault, 164 USPQ 666, 667 (Bd. App. 1969).

Claims 18, 24, 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harris et al (US PG PUB No. 2002/0179863) in view of Nyseth et al (US PG PUB No. 2002/0125170) and Matsuyama et al (US Patent No. 6,238,283).

Regarding Claims 18, 25: Applicant has invoked 35 USC 112, 6th paragraph for claim limitation “means for depositing a substrate in each of the storage elements”, for which the disclosed structure is

reference number 16 (Figure 2 and abstract). Applicant has also invoked 35 USC 112, 6th paragraph for claim limitation “a locking means for sealing said transport storage container structure such that clean room conditions are maintained in a space of said transport storage container structure defined by said plurality of storage elements” for which the disclosed structure comprises two clamps (not shown in detail), each of which grips around both the cover plate 210 and the bottom plate 211, or the transport container 200 shown to be inserted into an external sealable transport box so that the sealing against external effects may take place by means of the external transport box (page 18, last para. to page 19).

Harris et al teach a transport container for transporting substrates and comprising:

a plurality of storage elements 142 stacked consecutively one on top of another to form a transport storage container structure 140, each storage element receiving a substrate 101 via a continuous rim (substrate depositing means) and a locking means for locking the cover to the container (for example, Fig. 6 and para. 0047).

Harris et al do not teach each storage element having a stacking area defined by one of said storage elements in contact with another storage element in a stacked location; and that locking means seals said transport storage container structure such that clean room conditions are maintained in a space of said transport storage container structure defined by said plurality of storage elements.

Nyseth et al teach a container comprising storage elements having a stacking area defined by one storage element 94 in contact with another storage element 94, in a stacked location and having substrate depositing means 96 (for example, Fig. 4,6 and para. 0048).

Therefore it would have been obvious to one of ordinary skills in the art at the time of the invention to provide a stacking area on each of storage elements as taught by Nyseth et al in the apparatus of Harris et al to minimize the space taken by all the storage elements in the transport container .

Harris et al in view of Nyseth et al do not teach locking means for sealing said transport storage container structure such that clean room conditions are maintained in a space of said transport storage container structure defined by said plurality of storage elements.

Matsuyama et al teach a transport containers comprising a cover 54b and a base portion 54a and having locking means 28 for hermetically locking the cover 54b with base portion 54a. Matsuyama et al further teach a transport container 160 having a cover 162 so that the container can maintain a clean room environment in its inside space. It would be obvious to provide such locking means in the transport container 160 (Matsuyama – Figure 31) in view of teaching of above teaching of Matsuyama to obtain a sealed container with clean room environment (for example, Fig. 7, 8, 31 and col. 12, lines 12-31 and col. 14, lines 29-40).

Therefore it would have been obvious to one of ordinary skills in the art at the time of the invention to provide locking means in the container that enables sealing the containing, as taught by Matsuyama et al in the apparatus of Harris et al in view of Nyseth et al to minimize contamination of the substrates and thus improve substrate processing quality.

Regarding Claim 24: Matsuyama et al teach storage box 54 can be sealed by lock 28 (locking means) [Fig. 8].

Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Abe et al (JP 2001-291759) in view of Kato et al (US Patent No. 5,752,609), Schneider (US Patent No. 4,055,258) and Cerf (US Patent No. 4,909,412) as applied to claims 1-8, 12-17, 19, 20 and 26 and further in view of Matsuyama et al (US PG PUB No. 2002/0125170).

Regarding Claim 21: Abe et al in view of Kato et al, Schneider and Cerf teach all limitations of the claim except sealing means for sealing storage elements.

Applicant has invoked 35 USC 112, 6th paragraph for the claim limitation “sealing means for pressing one storage element against another storage element such that said storage elements are sealed” and for which the disclosed structure includes storage rings having sealing elements and together with the cover plate and the bottom plate, they form a sealed transport container 200 for substrates, or alternately the transport container 200 can be inserted into an external sealable transport box.

Matsuyama et al teach a transport container 54 that is inserted into an external sealable transport container 12 having a hermetically sealed space 16 (for example, Fig. 1-4 and col. 7, lines 9-40).

Therefore it would have been obvious to one of ordinary skills in the art at the time of the invention to provide an external sealable container (as sealing means) for housing the transport container as taught by Matsuyama et al in the apparatus of Abe et al in view of Kato et al, Schneider and Cerf to enable transfer the substrates while enclosed in a clean environment.

Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Abe et al (JP 2001-291759) in view of Kato et al (US Patent No. 5,752,609), Schneider (US Patent No. 4,055,258), Patent No. 3,827,582), Cerf (US Patent No. 4,909,412) and Tanaka et al (US PGPUB No. 2002/0002946) as applied to claim 22 and further in view of Matsuyama et al (US Patent No. 6,238,283).

Regarding claim 23: Abe et al in view of Kato et al, Schneider, Cerf and Tanaka et al teach all limitations of the claim except further comprising a cover plate and a lower bottom plate, a space in which said plurality of storage elements is located, said sealing means, said cover plate, said lower bottom plate and said nitrogen providing clean room conditions within said space.

Matsuyama et al a substrate container comprising a cover 54b, a lower bottom plate 54a and locking means 28 (sealing means) and a hermetically sealed space with plurality of storage elements. Matsuyama et al further teach a gas introduction pipe 84 and a gas release pipe 86 connected to the lower bottom plate 54a of the container 54 and a pressurized gas such as nitrogen can be introduced into the container 54 through the gas introduction pipe 84, thus providing a clean room condition in the space (Fig. 18 and col. 13, lines 28-40).

Therefore it would have been obvious to one of ordinary skills in the art at the time of the invention to provide cover plate, lower bottom plate, sealing means and nitrogen supplied to the space containing storage elements as taught by Matsuyama et al in the apparatus of Abe et al in view of Kato et al, Schneider, Cerf and Tanaka et al to provide a clean environment thus reducing particle contamination of the substrates.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

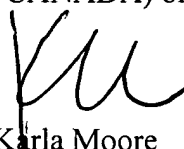
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rakesh K. Dhingra whose telephone number is (571)-272-5959. The examiner can normally be reached on 8:30 -6:00 (Monday - Friday).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Parviz Hassanzadeh can be reached on (571)-272-1435. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Rakesh K. Dhingra



Karla Moore
Primary Examiner
Art Unit 1792